

**What Is Claimed Is:**

1. A method of forming a molded fibrous construct, comprising the steps of:
- 5                   a)     forming a fibrous batt from staple length fibers  
                  comprised at least in part of thermoplastic polymer,
- b)     mechanically integrating the fibrous batt into a fibrous  
pre-form mat,
- c)     thermally treating the fibrous pre-form at a first elevated  
temperature for an initial duration,
- 10                  d)     cooling the fibrous pre-form to less than the first elevated  
temperature, and
- e)     thermoforming the thermally treated fibrous pre-form  
into a molded construct.
2. A method of forming a molded fibrous construct as in claim 1,
- 15 wherein said staple length fibers are selected from the group consisting of  
natural fibers, synthetic fibers, and the blends thereof.
3. A method of forming a molded fibrous construct as in claim 2,  
wherein said staple length synthetic fibers are selected from a group consisting  
of polyacrylates, polyolefins, polyesters, and polyamides.
- 20                  4. A method of forming a molded fibrous construct as in claim 2,  
wherein said staple length fibers are selected from a group consisting of  
cotton, wood pulp, rayon, and the combinations thereof.
5. A method of forming a molded fibrous construct as in claim 1,  
wherein said staple length thermoplastic fibers have a denier of at least 1.0.
- 25                  6. A method of forming a molded construct as in claim 1, wherein  
said fibrous batt has a binder fiber composition of at least 50% by weight.
7. A method of forming a molded fibrous construct, comprising the  
steps of;
- a)     forming a fibrous batt from staple length fibers
- 30                  comprised at least in part of thermoplastic polymer,



- b) mechanically integrating the fibrous batt into a fibrous pre-form mat,
- c) position at least one facing layer in face to face juxtaposition with the fibrous pre-form,
- 5 d) thermally treating the layered fibrous pre-form at a first elevated temperature for an initial duration,
- e) cooling the layered fibrous pre-form to less than the first elevated temperature, and
- f) thermoforming the thermally treated layered fibrous pre-  
10 form into a molded compound construct.

10. A method of forming a molded fibrous compound construct, comprising the steps of;

- a) forming a fibrous batt from staple length fibers comprised at least in part of thermoplastic polymer,
- 15 b) mechanically integrating the fibrous batt into a fibrous pre-form mat,
- c) position at least one facing layer in face to face juxtaposition with the fibrous pre-form,
- d) thermally treating the layered fibrous pre-form at a first  
20 elevated temperature for an initial duration,
- e) compressing the heated layered fibrous pre-form to a level less than an uncompressed fibrous pre-form and greater than the part depth a molded fibrous construct is to have,
- f) cooling the layered fibrous pre-form to less than the first  
25 elevated temperature,
- g) thermoforming the thermally treated fibrous pre-form into a molded compound construct.

11. A method of forming a molded fibrous compound construct, comprising the steps of;

- a) forming a fibrous batt from staple length fibers  
comprised at least in part of thermoplastic polymer,
- b) mechanically integrating the fibrous batt into a fibrous  
pre-form mat,
- 5 c) position at least one facing layer in face to face  
juxtaposition with the fibrous pre-form,
- d) thermally treating the layered fibrous pre-form at a first  
elevated temperature for an initial duration,
- e) compressing the heated layered fibrous pre-form to a  
10 level equal to the part depth a molded fibrous construct is to have,
- f) cooling the layered fibrous pre-form to less than the first  
elevated temperature,
- g) thermoforming the thermally treated layered fibrous pre-  
form into a molded compound construct.

15 12. A molded construct comprising,

- a) a fibrous mat comprised at least in part of thermoplastic  
polymer,
- b) said thermoplastic polymer comprised of at least one heat  
activated binder component,
- 20 c) said fibrous mat having been heated to the activation  
temperature of the binder component, then cooled to a temperature less  
than the activation temperature of the binder component.

13. A molded construct comprising a fibrous batt integrated into a  
fibrous pre-form mat, wherein:

25 said fibrous pre-form is subjected to an elevated temperature,  
compressed to a depth less than the uncompressed fibrous pre-form and  
greater than the part depth of the molded construct, cooled, and  
thermoformed.

30 14. A molded construct comprising a fibrous batt integrated into a  
fibrous pre-form mat, wherein:

said fibrous pre-form is subjected to an elevated temperature, compressed to a level equal to the part depth of the molded construct, cooled and thermoformed.

5 15. A molded construct comprising a fibrous batt integrated into a fibrous pre-form mat, wherein:

said fibrous perform comprises at least one facing layer, subjected to an elevated temperature, cooled, and thermoformed.

10 16. A molded construct comprising a fibrous batt integrated into a fibrous pre-form mat, wherein:

said fibrous perform comprises at least one facing layer, subjected to an elevated temperature, compressed to a level less than an uncompressed fibrous pre-form and greater than the part depth of the molded construct, cooled, and thermoformed.

15 17. A molded construct comprising a fibrous batt integrated into a fibrous pre-form mat, wherein:

said fibrous perform comprises at least one facing layer, subjected to an elevated temperature, compressed to a level equal to the part depth of the molded construct, cooled, and thermoformed.

20 18. A molded construct comprising a fibrous batt, which is integrated into a fibrous pre-form mat, having a stiffness performance of at least 15% greater than a molded construct devoid of a fibrous pre-form.

19. A molded construct as in claim 7, wherein said molded construct is an automotive interior panel.

25 20. A molded construct as in claim 7, wherein said molded construct is an appliance facing.

21. A molded construct as in claim 7, wherein said molded construct is an acoustic dampening shield.

22. A molded construct as in claim 7, wherein said molded construct is a domestic furnishing.

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